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INFORMATION REPORT

PREPARED AND DISSEMINATED BY
CENTRAL INTELLIGENCE AGENCY

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COUNTRY
Hungary

SUBJECT
ARMY review completed.

25th and 66th Air Divisions/Performance Characteristics of Soviet Jets

DATE DISTRIBUTED 26 Mar '57

NO. OF PAGES 5 | NO. OF ENCLS.

SUPPLEMENT TO REPORT #

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NAVY review completed.

USAF review completed.

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3. Electronic Equipment in the MIG-15.--The "Ark" Radio Compass, which is indispensable for takeoff during bad weather, requires a five minute preliminary warm-up period in order to heat the electronic tubes of the compass before takeoff can...

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be made.

4. IFF Equipment: The MIG-15 carries a transmitter-receiver plus a transponder which is called the "SZ.R.O" (meaning unknown). This apparatus is built into the top section of the nose and contained in a black box. Its purpose is to encode identification signals during communication with the ground. 25X1
the SZ.R.O. 25X1
contained an explosive charge. Pilots were instructed to set it off in the event of a forced abandonment of their aircraft. /See attachment 2, described at end of report for an illustration of the SZ.R.O. antenna./ The device's antenna was located to the rear of the cockpit in an upright position. It stood 20 centimeters high; it was 1.5 to 2 cm at its thickest diameter. The ground counterpart of the SZ.R.O. was called the "N.R.Z."(Both the SZ.R.O. and N.R.Z. equipment were in Russian designations.) The transceiver has four different code possibilities and code changes occurred arbitrarily, two to four times a day.
25X1

5. Performance Characteristics of the MIG-15.--The maximum ceiling 25X1
in a MIG-15 was 14,300 meters.
25X1

6. At the instant of ejection from the MIG-15, the pilot is exposed to a peak pressure of 15 "g's". At seven hundred kilometers per hour, a pilot who weighs an average of 90 kilograms will clear the aircraft tail assembly by a dangerously 25X1
small margin of only 26 centimeters. one pilot killed
during catapulting from MIG-15 because he failed to clear the tail assembly. 25X1

7. It was dangerous to land a MIG-15 in the rain because when descending to the airstrip the water on the canopy caused a reversed reflection of the airfield due to the curvature of the canopy. This gave the pilot an impression that he was landing upside down. This optical illusion was responsible for many crashes.

8. Reflex Action of HAF Pilots.--HAF pilots were taught by Soviet-trained instructors to make left banks after takeoff and before landing at airfield. Pilots were also taught to peel off to the left at a target for strafing 25X1
attack. pilot trainees could make much better scores during tow-target practices when attacking from the right rear. Pilots preferred to make left banks to right banks because they could control their aircraft more accurately.

9. Intercept Time Requirements.--From the time of radar detection of an aircraft it takes two minutes to report it to a filter center by radio or telephone communication; it takes one minute for the filter center to determine its identity; if it cannot be identified by the filter center, it is referred to the ADC at Budapest for positive identification; this action requires at least one minute; ADC will, if need be, issue scramble instructions to an airfield for interception purposes. This action will consume a minimum of one minute. The total time elapsing from detection to scramble is a minimum of five minutes. In addition, it would require a minimum of two minutes before interceptor aircraft are airborne and on proper heading towards the target. It takes an additional minute for the interceptor to reach a one thousand meter altitude, at which point, the ground radar assumes control over the aircraft and vectors it toward the target. There was no specified time when the aircraft became independent from ground radar control. Pilots remained under the control of ground radar until released.

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The MIG-17 PF (P-radar equipped, F-is afterburner equipped):

10. The overall weight of the MIG-17 aircraft is seven metric tons plus or minus 100-200 kilograms.

11. Rate of climb; it requires eight minutes to reach an altitude of ten thousand meters (with afterburner) from takeoff.

12. Maximum ceiling: between thirteen thousand and 15 thousand meters.

13. Maneuverability: the MIG-17PF is more sluggish than the MIG-15 because of the added weight of the radar equipment. 25X1

14. During attack the MIG-17 can veer eight degrees to a side and still direct effective fire on its target. The best intercept methods were the head-on or tail-chase. With the small margin of fire control (total of 16 degrees), it would be extremely difficult to hit a target from any right angle approach.

25X1

15. Minimum weather conditions for takeoff and landing are a two hundred meter ceiling and two kilometer visibility. Under these minimum weather conditions a flier can still land in radio silence; if he uses his radio transmitter it may affect his navigational instruments to a point where it may cause a fatal miscalculation. HAF instructions call for abandoning the aircraft under adverse weather conditions below the given minimum if all reachable airfields are closed in. No aircraft is authorized to take off under below minimum weather conditions without specific clearance from the Ministry of Military Affairs.

MIG-17 Radar Characteristics:

16. Theeffective range of the MIG-17 radar is approximately 12 kilometers. It will detect a large aircraft (TU-4 type)at 12 kilometers, but will only detect a MIG-15 type aircraft at the maximum of six kilometers.

17. The minimum altitude at which radar can be used is two thousand meters; anything below that minimum will reflect too much ground clutter on the scope.

18. The forward scan for the radar is 120 degrees horizontally, 24 degrees above the horizontal and approximately 16 degrees below the horizontal.

The IL-28

19. Hungary purchased four IL-28's from the USSR. 25X1
production of the IL-28 was discontinued by 25X1
the Soviets in 1956 because of many mid-air accidents. Wings broke off or engines blew up.

20. 25X1
Approximately 30 aircraft were traveling at an estimated rate of six hundred kph at 12 to 15 thousand meters. 25X1
radar returns were those of TU-16's. the TU-16 is the 25X1
bomber counterpart of the commercial TU-104 passenger plane. These TU-16's were based at Lwow Air Force Base and were on an excercise to Papa Airfield.

The MIG-19

21. In the summer of 1956, an unidentified aircraft penetrated into Hungary from Rumania. A MIG-19 aircraft was scrambled from Papa Airfield to intercept it. The intercept was directed from Kecskemet fighter control center and the MIG-19 was vectored onto the unidentified aircraft. The

note

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pilot reported to the Fighter Control Center that his MIG-19 was unable to intercept the intruder since he could not reach his altitude. The intruder remained approximately two thousand meters above the MIG-19. The MIG-19 pilot reported that he reached a ceiling of approximately 17,200 meters elevation. The intruder continued over Yugoslavia.

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22. Colonel Kutasi, an HAF officer, stationed at ADC. Kutasi was an engineer in "TKI" (Tavkuziesi Kutato Inteset - Distant - Communication Research Institute). Kutasi asked questions pertaining to time lost between detection of enemy aircraft and scramble time, also vectoring of interceptors and other air defense problems. The reason Kutasi was collecting data on air defense problems was because he was engaged in the design of an electronic system capable of identifying aircraft detected by radar, scrambling interceptors, and vectoring interceptors to target. Kutasi completed two usable and effective versions of this system, a cheaper version which was partially mechanical but less effective, and another which was completely electronic but very efficient and expensive. The electronic version had been described as being capable of plotting, identifying and scrambling interceptors almost simultaneously with radar detection time. The prototype of this equipment was designed and constructed at TKI. Kutasi submitted his drawings, data and the prototype for ADC approval sometime early in 1956, but was informed that an identical apparatus was already in production in the USSR and permission to produce this equipment in Hungary was denied. Data and apparatus was taken to the USSR. Kutasi later found out, during the summer of 1956, that the equipment designed by him was in production in the USSR.

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23.

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classified CONFIDENTIAL, are these attachments:

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A. Organization chart of the 25th HAF Fighter Division, showing disposition of MIG-15's and MIG-17's at Taszar and Sarmellek.

B. Illustration of the SZ.R.O. antenna and location of the SZ.R.O. coder on the MIG-15.

C. Illustration showing a MIG-15 pulling a tow-target for gunnery practice.

D. An illustration of a reflector used during radar intercept practice for the MIG-17. For training purposes a corner reflector was mounted on one of the auxiliary tanks of a MIG-15 for the purpose of simulating long-range, large aircraft radar returns during maneuvers while pursuing the MIG-17. These reflectors were triangular metal pieces, 15 to 20 cm to a side. The inside angle of the reflector was 120 degrees; the outer angle 30 degrees.

E. An illustration showing the approximate position of the dive brakes on the rear third of the MIG-17's fuselage. The brakes could be opened hydraulically to two positions -- first to 20 degrees, and then an additional 35 degrees.

F. Illustration of a MIG-17's ejection seat. Before a pilot can eject himself he must first reach behind the head armor plate to release

25X1

a pin which holds the lateral plates that swing to the sides. This action simultaneously activates the catapult firing mechanism. These lateral metal pieces help lift the pilot 25X1
over the tail assembly as they direct air upward.
no accidents when a MIG-17 pilot had to bail 25X1
out over Hungary. a pilot,
in an emergency, could shoot himself through a MIG-17 canopy.

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G. Sketch showing effective range of MIG-17 radar and horizontal sweep.

H. Three-part sketch showing:

(1) Effective range and vertical sweep of MIG-17 radar.
(2) IFF equipment, probably located on MIG-17's right wall.
(3) Sketch showing gray covering under which MIG-17 radar antenna is housed.

I. Sketch of MIG-17 radarscope w/sight.

- end -

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ORGANIZATIONAL CHART OF THE 25TH HAF JET FIGHTER DIVISION.

25th FTR. DIV.

COMDR.	VÖRÖSMARTY. (COL.)	4 MIG-15's (Bis2 Type)
ADJ.	JUGOVICS, JANOS (COL.	ASSIGNED FOR COMMAND USE.
CHIEF OF STAFF	SCHMIDT (CAPT)	
POL. ADVISOR TO COMMANDER	KOMAROMI (COL)	

TASZÁR 4 MIG-15th Asgd. for CO Use.

24th (or 50th) FTR. WG. includes 180 Ha Kpg. Police, Instl, Etc. Trps.

- #1 Sq. (8- 1st Line MIG 15's Asgd.)
- #2 Sq. (8- 1st Line MIG 15's Asgd.)
- #3 Sq. (8- 1st Line MIG 15's Asgd.)

Plus: 6 MIG-17 PF (P= RADAR F= AFTERBURNER Acft Asgd.) (All Weather Fighter)

35th FTR. WG. includes 180 Ha Kpg. Police, Instl, Etc. Trps.

TASZÁR 4 MIG-15's Asgd. for COMMAND USE.

- #1 Sq. (8- 1st. line Acft. Asgd.)
- #2 Sq. (8- 2nd line Acft. Asgd.)
- #3 Sq. (8- 3rd line Type Acft. Asgd.)
- #4 Sq. (8- Trainer Type Reconditioned Acft. Asgd.)

50th (or 24th) FTR. Wg includes 180 Ha Kpg. Police, Instl. Etc. Trps.

SÁRMELLÉK (GIBL - CAPT KISS (CAPT) 4 MIG 15's Asgd for Command use.

- #1 Sq. (8- 1st. Line MIG 15's Asgd.)
- #2 Sq. (8- 1st Line MIG-15's Asgd.)
- #3 Sq. (8- 1st. Line MIG 15's Asgd.)

FOR EACH ASGD. ACFT.	FOR 4 ASGD. ACFT.	FOR 8 ASGD. ACFT.	EACH WG. HAD IN ADDITION
Folg personnel Necessary within Squadron.	(Additional Folg Personnel Necessary within Squadron.	(Additional Pers. Necessary within Sq.)	1- Wg Engr. off.
1- Pilot	1- Echelon (Formation) Technician (Officer)	1- Sq. Engr. off.	1- Wg Ordinances off.
1- Technician (officer)	1- Communications off.	1- Sq. Gunnery off.	1- Wg Eng + Fuselage Technician off.
1- Crew Chief (NCO)	1- Gunnery off.	1- Sq. Comm. off.	1- Wg Comm. off.
1- Asst. Crew Chief (EM)	1- Acft. Eng. + Fuselage Technician.	1- Acft. Eng. + Fuselage Technician.	1- Photo off.
		1- Political Adv. (off.)	1- Chemical Warefare off.
			1- Athletic off.
			3- Pol. Adv. off.

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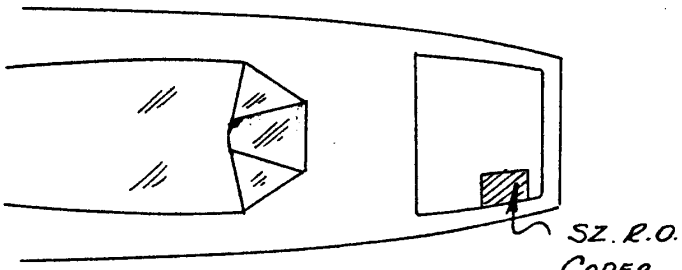
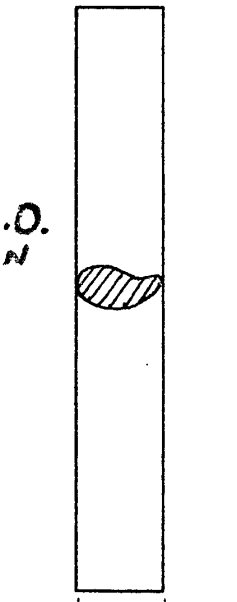
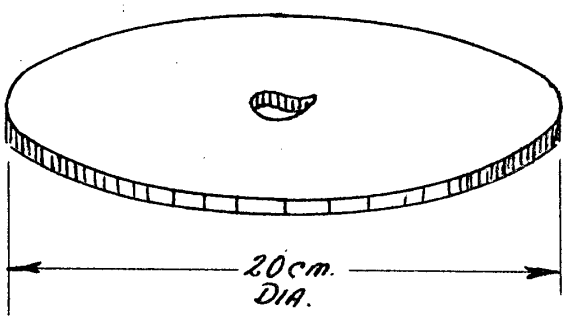


—TOP VIEW—

ILLUSTRATION OF SZ.R.O. ANTENNA AND LOCATION OF SZ.R.O. CODER ON THE MIG-15.



S.Z. R.O.
(MIG-15)



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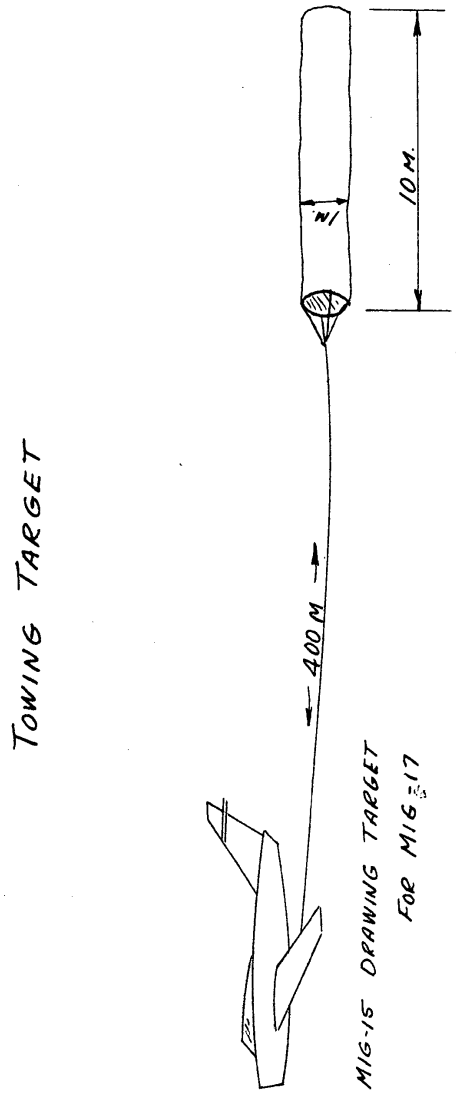

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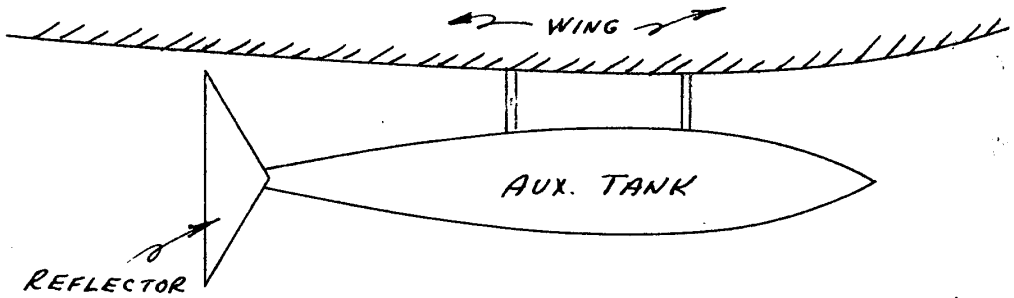
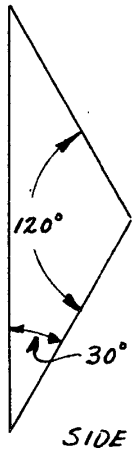
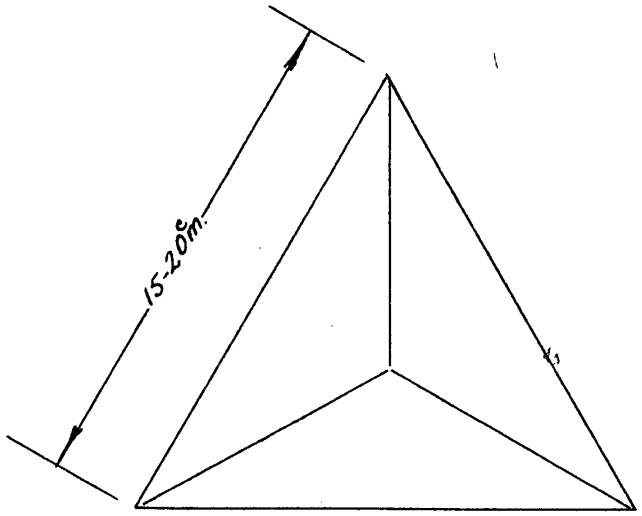


MIG-15



SIDE VIEW OF REFLECTOR



END VIEW

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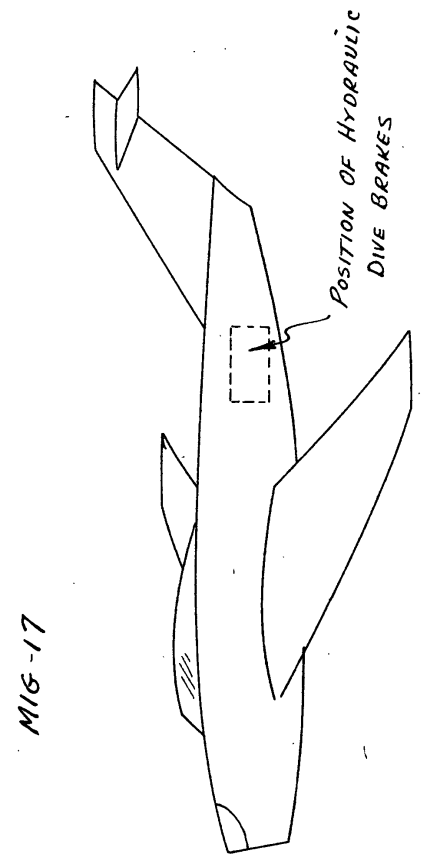

MIG-17

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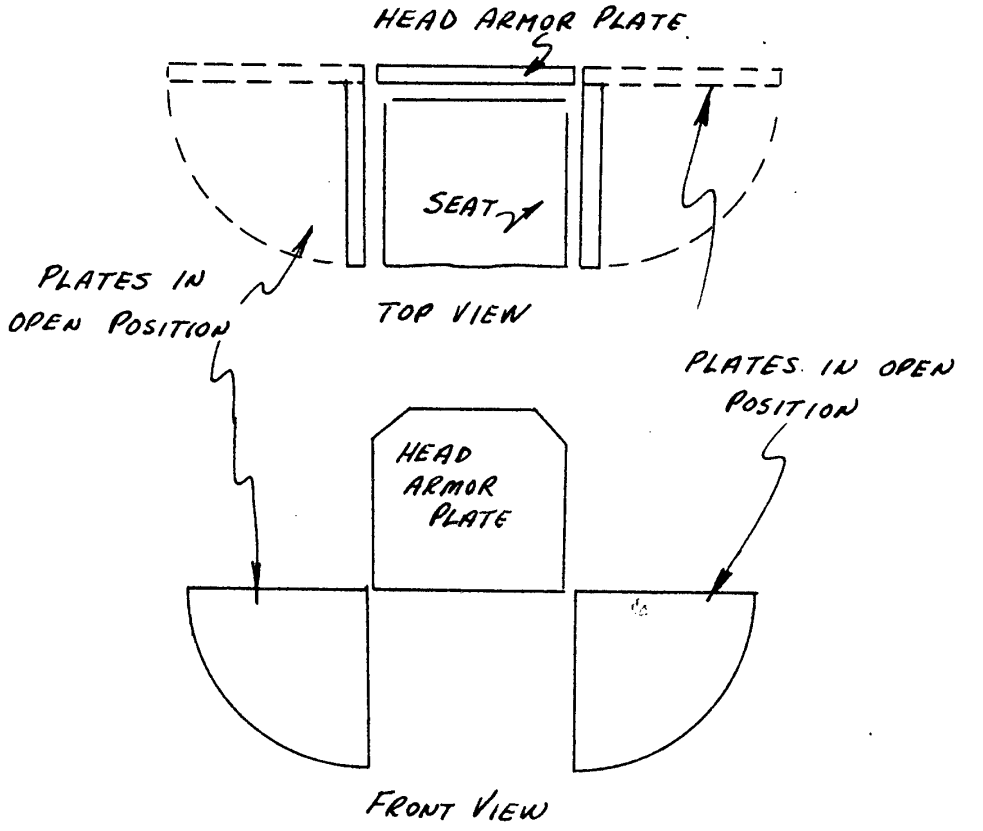

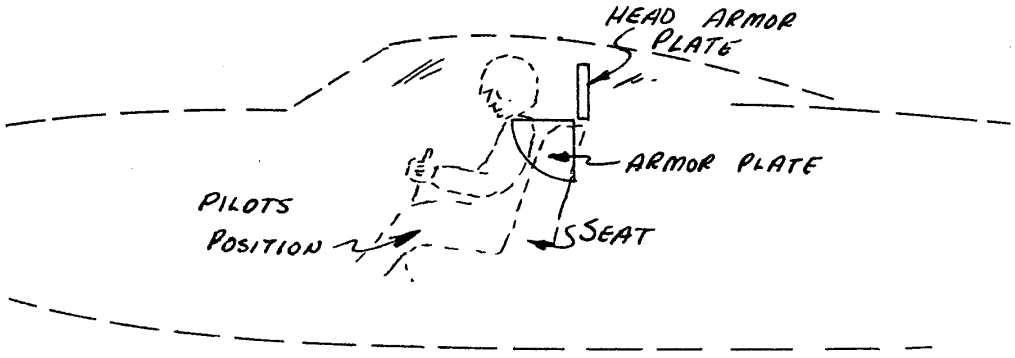

EJECTION SEAT MIG-17

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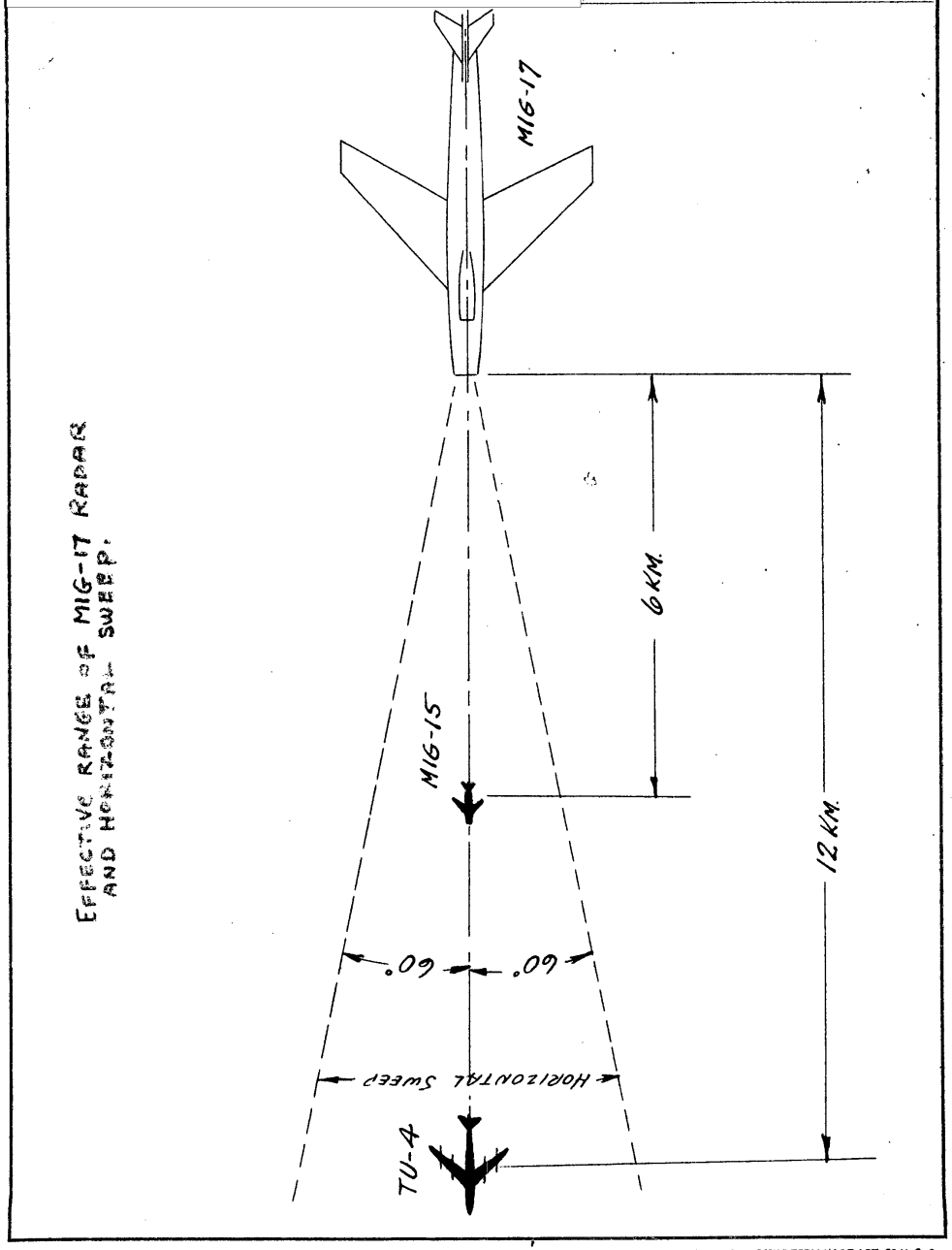

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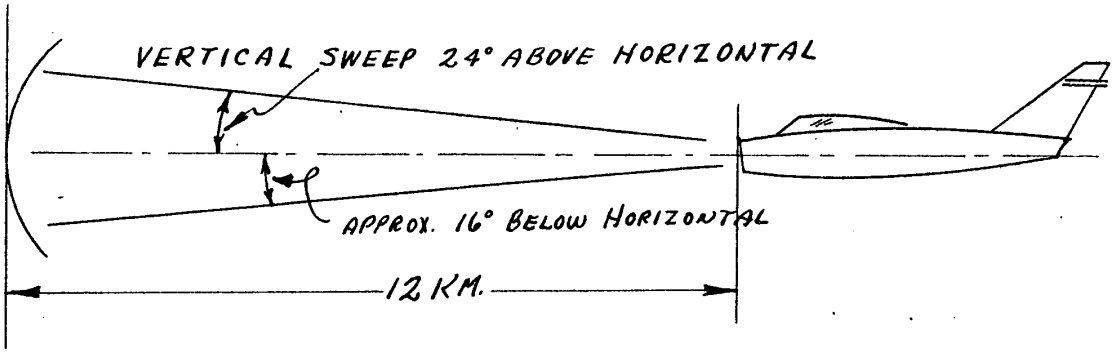
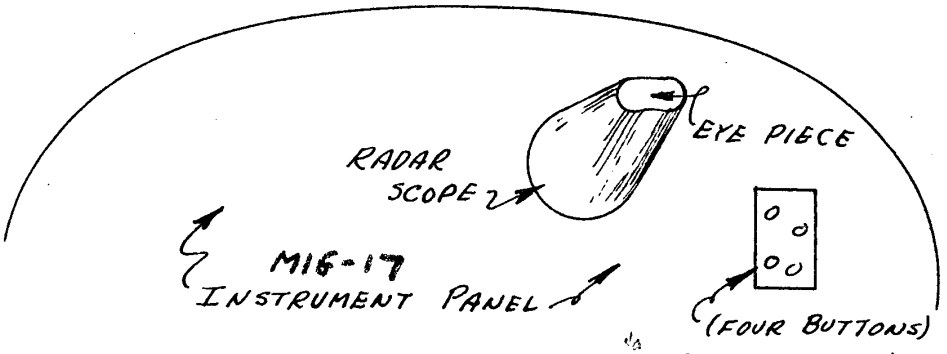


EFFECTIVE RANGE AND VERTICAL SWEEP OF MIG-17 RADAR



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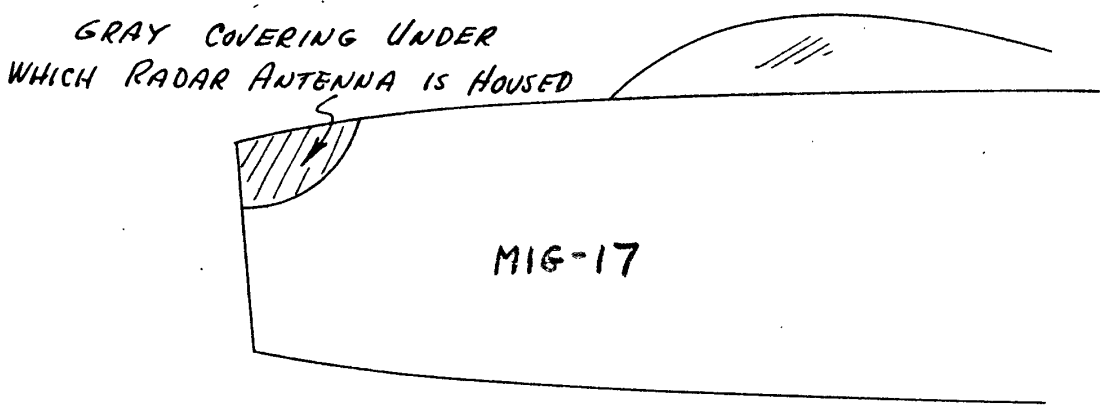

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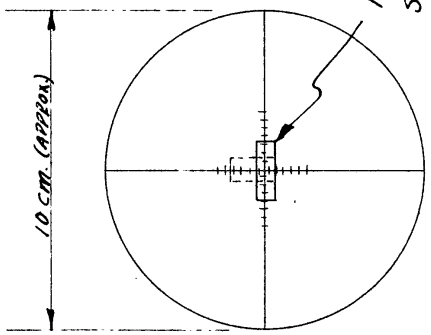
MIG-17 RADAR SCOPE W/SIGHT



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